Semester – II (AEC- 2)

Science	Social Science/Arts	Commerce
• Environmental Science	• Environmental Science	• Environmental Science

Unit 1: Introduction to environmental studies

- Multidisciplinary nature of environmental studies
- Scope and importance; Concept of sustainability and sustainable development.

Unit 2: Ecosystems

- What is an ecosystem?
- Structure and function of ecosystem;
- Energy flow in an ecosystem: food chains, food webs and ecological succession.
- Case studies of the following ecosystems:
  a) Forest ecosystem
  b) Grassland ecosystem
  c) Desert ecosystem
  d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 3: Natural Resources: Renewable and Non – renewable Resources

- Land resources and land-use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests,
- biodiversity and tribal populations.
- Water: Use and over – exploitation of surface and ground water, floods, droughts, confl - icts
- Over water (international & inter-state), Dams – benefits and problems.
- Food resources: World food problems, changes caused by agriculture and over-grazing, effects
- of modern agriculture, fertilizer-pesticide problems, waterlogging, salinity.
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy
- sources, growing energy needs, case studies

Unit 4: Biodiversity and Conservation

- Levels of biological diversity: genetic, species and ecosystem diversity; Bio-geographic zones
- of India; Biodiversity patterns and global biodiversity hotspots.
- India as a mega-biodiversity nation; Endangered and endemic species of India, threats to
- biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions.
- Conservationof biodiversity: In – situandEx – situconservationofbiodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and
- Informational value.

Unit 5: Environmental Pollution

- Environmental pollution: types, causes, effects and controls; Air, water, soil and noise
- pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.
- Pollution case studies

Unit 6: Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human
- communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution)
- Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest
- Conservation Act. International agreements: Montreal and Kyoto protocols and Convention
- on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian
- context.

Unit7: Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare.
    - Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquake, cyclones and landslides.
- Water conservation, rain water harvesting, watershed management.
- Wasteland reclamation.
- Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.

1. Visit to local polluted site **(any one)**

    a) Urban: Identify the major sources of air pollution in a city or town of North Bengal region.
    b) Rural: Analyse the major sources of organic pollution in villages and adjoining agricultural fields.
    c) Industry: Prepare a list of the large and medium industries in and around your college are and the probable pollutants they may produce.

2. Study of flora and fauna **(any one)**

    a) Prepare a list of the economic plants available in the college block.
    b) List the birds sighted and found nesting at the college campus and its surroundings with the season of their occurrence.
    c) Record insects associated with any common crop/grassland/tree of the college area with an idea of their habitat.

3. Visit to local area to document environmental assets **(any one)**:

a) Trip to any riverine system of Terai or the dooars: comment on the direction, volume and quality of water, flowing as observed.
b) Record the nature of vegetation/forest type/land use pattern at the site of visit.
c) Analyse the cause of deforestation and landslide on hill slope, if sighted.

4. Study of ecosystems. **(any one)**

a) Pond: water parameters – turbidity, pH, producers (phyto and zooplanktons) and related consumers (fishes and birds).
b) Grassland on hill slope: producers (plants), insects, consumers (birds, mammals, reptiles etc.)
c) Forest: practical concept of forest type, stories, dominant trees and sub – dominant vegetation, observed and reported major herbivores and carnivores in a forest ecosystem.

5. Submission of a field work (covering the above practical works undertaken)

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